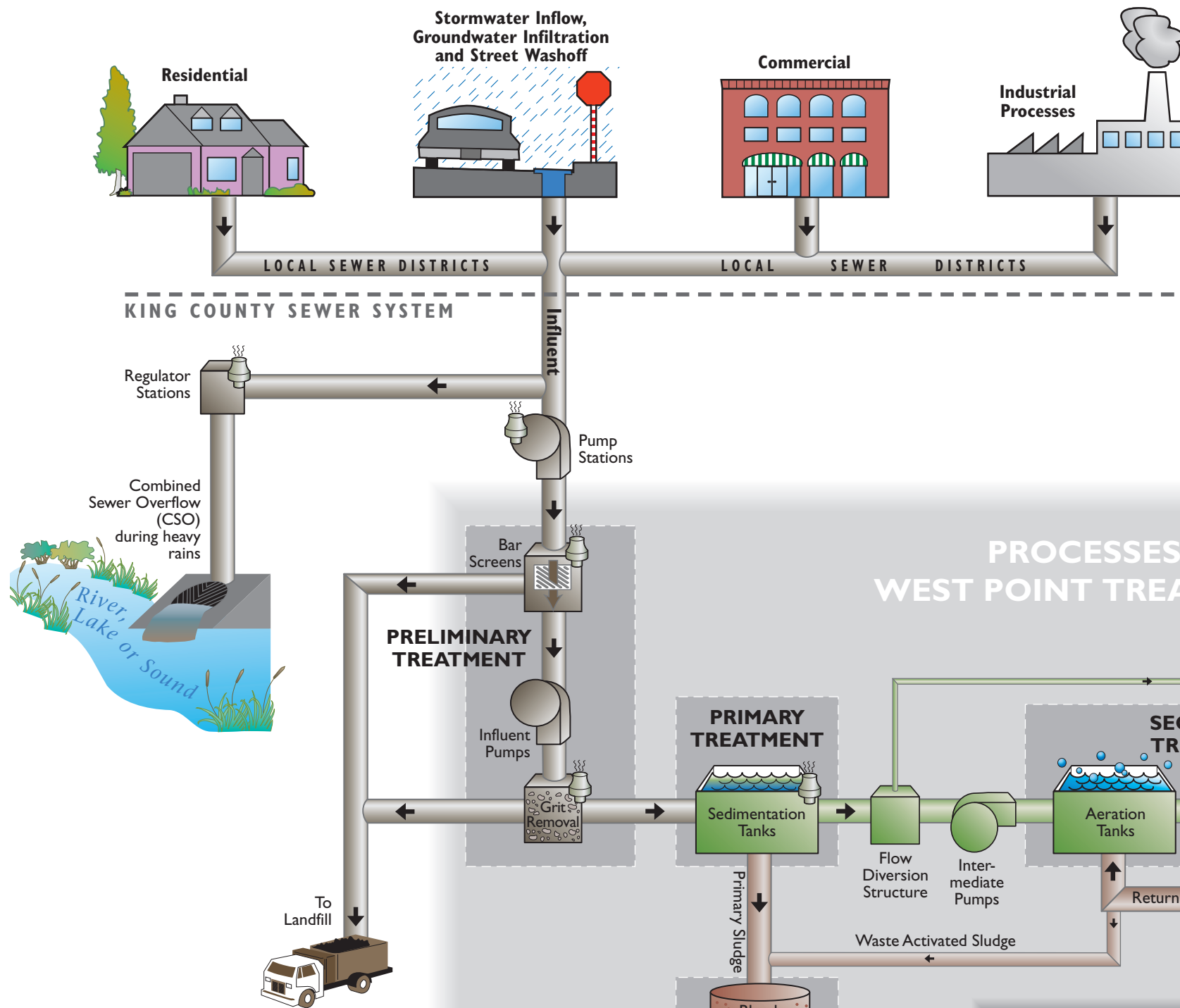
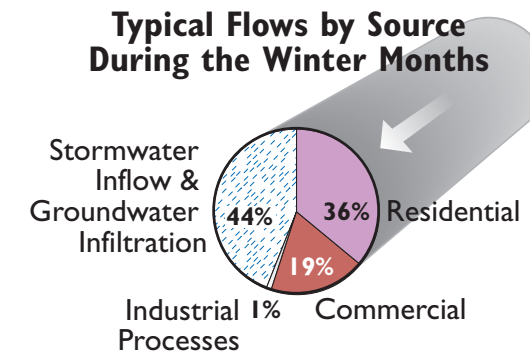


WASTEWATER TREATMENT PROCESS

How is wastewater treated at King County's West Point Treatment Plant?

WHAT'S COMING INTO THE PLANT?



PRELIMINARY TREATMENT — 'Taking out the trash'

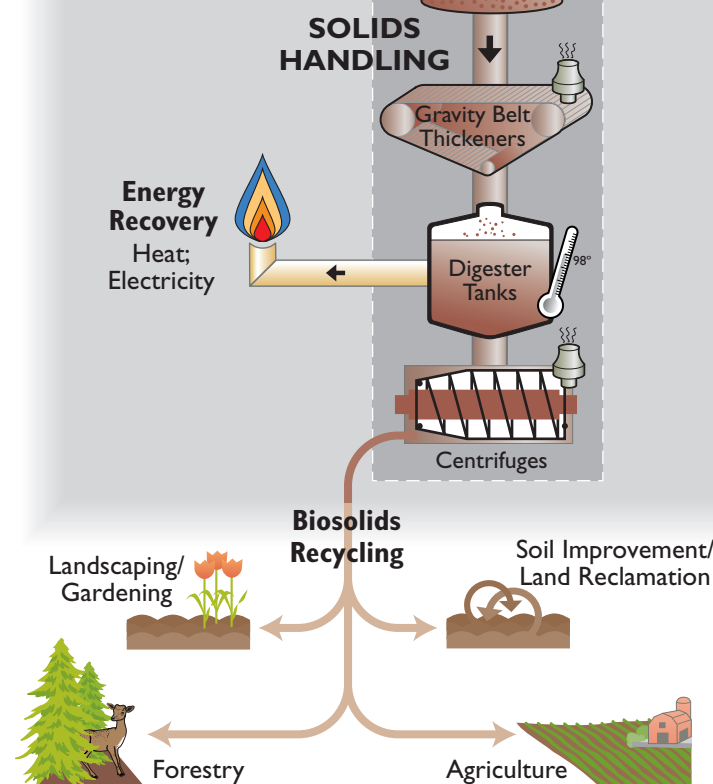
- Bar screens screen raw wastewater (called influent) as it enters West Point to remove large debris like rags, paper, and leaves.
- After screening, wastewater is pumped into aerated grit chambers that remove sand and gravel.
- The debris and grit removed during this process are trucked to a landfill.

PRIMARY TREATMENT — a physical process — 'Scum floats; sludge settles'

- Wastewater settles in long tanks called primary sedimentation tanks. Heavy material sinks to the bottom (as sludge), and light material floats to the top (as scum).
- Skimmers remove scum from the surface and scrapers remove sludge from the tank bottom. Both are then sent onto the solids handling process.
- At this point anything that could have settled out has. The treated water, now called primary effluent, flows to the flow diversion structure.
- West Point is designed to handle a peak combined flow of 440 million gallons a day (mgd).

SECONDARY TREATMENT — a biological process — 'Friendly bugs eating contaminants'

- Primary effluent is pumped to aeration tanks where oxygen is added to encourage growth of useful bacteria naturally present in the wastewater. Bacteria from the end of the treatment process are also recycled—'more hungry mouths to feed'—to speed up the reaction.



- Bacteria eat suspended and dissolved organic material in the water. In the process, they produce more bacteria.
- The wastewater then goes to secondary clarifiers, large round sedimentation tanks where bacteria settle to the bottom of the tank as secondary sludge.
- Most (90 percent) of secondary sludge goes back to the aeration tanks to process ('eat') more organic material; the rest goes to the solids handling process.
- The remaining water—secondary effluent—leaves the clarifiers at least 85 percent cleaner than when it entered West Point.

DISINFECTION — 'Zapping pathogens'

- Secondary effluent is chlorinated, destroying most remaining pathogens, or disease-causing bacteria.

WEST POINT TREATMENT PLANT FACTS

- Design average wet weather flow: 133 million gallons per day
- Design peak secondary capacity: 300 million gallons per day
- Design maximum capacity: 440 million gallons per day during peak storms
- Outfall pipe: 3,600 feet long, 240 feet deep, 500-foot diffuser
- Reclaimed water produced: up to 250 million gallons per year
- Biosolids produced: about 50,000 wet tons per year
- Electricity produced: up to 15 million kilowatt-hours per year

- The final effluent is dechlorinated before it is released through an outfall pipe and diffuser into Puget Sound.

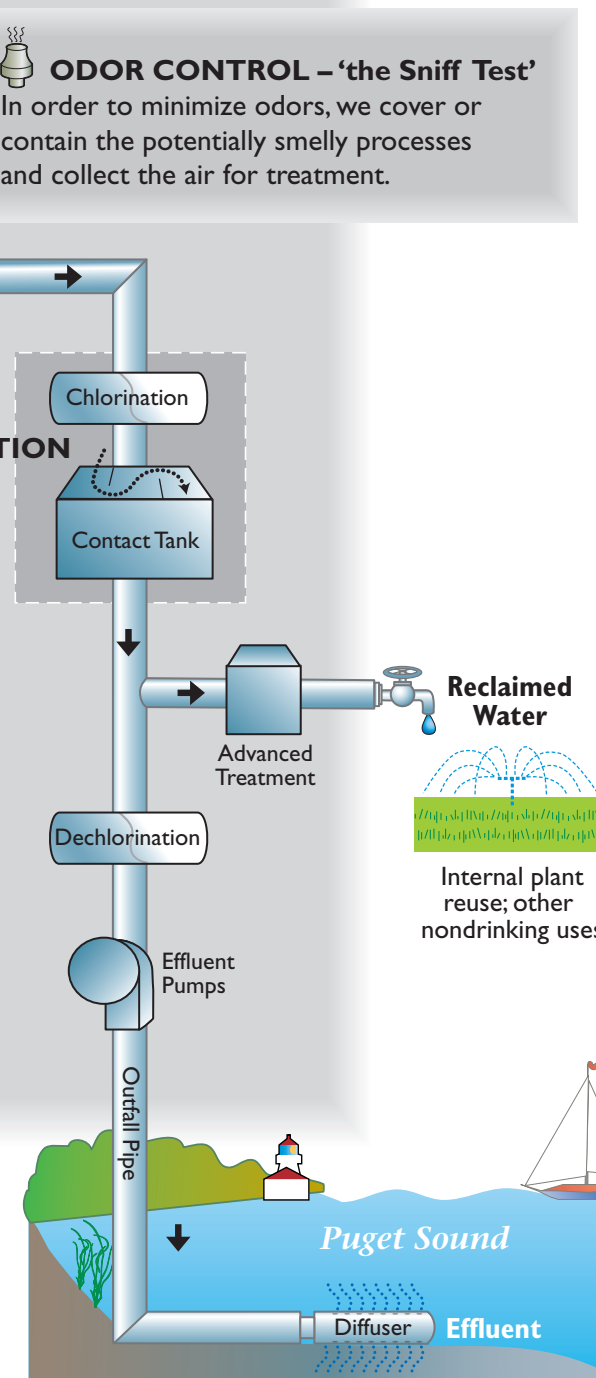
RECLAIMED WATER — 'Saving H₂O'

- After disinfection, some secondary effluent undergoes advanced treatment (coagulation, filtration, disinfection) to reduce use of potable water in plant processes.

SOLIDS HANDLING

Creating biosolids — 'Blend, thicken, digest, dewater'

- Raw organic solids—primary sludge and scum and secondary sludge—are blended in a large tank and then pumped to porous conveyor belts that use gravity to drain water off and thicken the material.



- After thickening, the solids are combined with primary scum (not shown) and pumped to digester tanks where anaerobic bacteria at 98 degrees Fahrenheit break down organic material and pathogens. The activity of the bacteria creates digester gas and reduces the solids mass by 50 percent.
- The digested solids are then pumped from digesters to equipment that use centrifugal force to remove water from the solids.
- Water removed from the digested solids goes back to the wastewater treatment process. The resulting dewatered solid material is nutrient-rich biosolids.
- West Point is a nationally recognized member of the National Biosolids Partnership—through its environmental management system—aimed at producing biosolids that are safe for use as a soil amendment.